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SHORTCHANGING EDUCATION

HOW U.S. SPENDING ON GRADES K-12 LAGS BEHIND OTHER INDUSTRIAL NATIONS

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Introduction and Summary

Over the past decade, Americans have become increasingly concerned about the educational and academic achievements of U.S. students, particularly at the primary and secondary levels. Numerous high-level commissions, composed of leaders from government, education, and business, have examined the schools, and most recently, state governors and Administration officials, including President Bush, met at the "Education Summit" to discuss needed reforms. Improving the education of U.S. students has risen to the top of the public agenda.

President Bush, who has declared his desire to be known as the "education president," has, however, attempted to limit the discussion of educational reform initiatives to those which do not involve spending additional public funds. At the "Education Summit" in September, President Bush declared that the U.S. "lavishes unsurpassed resources on [our children's] schooling." Therefore, "our focus must no longer be on resources. It must be on results."[1] At this same conference, Secretary of Education Lauro Cavazos stated that the problem with U.S. education "is not ... an issue of dollars... [F]unding is truly not an issue."[2]

The President and Administration officials have justified this anti-spending stance by asserting that the U.S. education system is already well-funded in comparison with other industrialized nations. Two measures of spending have been used by Administration officials and others to compare U.S. expenditures with those of other countries. One measure is spending per pupil. According to Secretary of Education Cavazos, "we are already spending more money per student than our major foreign competitors, Japan and Germany."[3] President Bush's Chairman of the Council of Economic Advisers, Michael J. Boskin, agrees: "[w]e spend more, per pupil, than most of the other major industrialized economies."[4] In *The New York Times*, Chester E. Finn, Jr., former Assistant Secretary of Education in the Reagan Administration and now director of the Educational Excellence Network of Vanderbilt University, wrote: "[w]e already spend far more per pupil than any other nation."[5]

The second measure of spending which is used to make international comparisons is the share of national income devoted to education. In an appearance on the NBC "Today Show" just before the September 1989 "Education Summit," President Bush's Chief of Staff John Sununu declared: "[w]e spend twice as much [on education] as the Japanese and almost 40 percent more than all of the other major industrialized countries of the world."[6] The Council of Economic Advisors chairman Michael Boskin stated, "we spend a very large amount of our national income on education."[7]

The Administration's proposition that U.S. education is well-funded and therefore poor student performance cannot be a matter of insufficient monies is a key element in the national debate over education. It has provided policymakers at federal, state, and local levels a convenient rationale for not devoting more resources to education in a time of budgetary stress.

This paper is an examination of the statistical under-pinnings of the Administration's claims. It concludes that the assertions about funding are misleading and therefore are invalid guides to education policy. Specifically, our examination of education expenditures in 16 industrialized countries, adjusted for differences in national income, shows:

*** U.S. public and private spending on pre-primary, primary and secondary education, the levels of schooling which have been the focus of most concern, is lower than in most other countries. The U.S. ties for twelfth place among 16 industrialized nations, spending less than all but three countries.

*** When expenditures for K-12 are further adjusted to reflect differences in enrollment rates, the U.S. falls to fourteenth place, spending less than all the other countries but two.

*** When U.S. *public* spending alone is compared to *public* spending abroad, we rank fourteenth in spending for *all* levels of schooling, fourteenth in spending on K-12, and thirteenth in K-12 spending adjusted for enrollments.

*** If the U.S. were to increase spending for primary and secondary school up to the *average* level found in the other 15 countries, we would need to raise spending by over $20 billion annually.

*** Because the U.S. spends comparatively more than other countries on higher education, when expenditures on all levels of education -- pre-primary, primary, secondary and post-secondary -- are calculated, we are in a three-way tie for second place among the countries studied.

This paper is focused on education spending. It is not a prescription for improving the U.S. education system. We recognize that money does

not guarantee excellence and we suspect that other changes -- in curriculum, in the status of teachers, and in expectations about students, to name just a few, will also be fundamental to any improvement in education quality and student achievement. But to begin a process of education reform by denying the need to increase spending, especially when U.S. schools are under-funded compared to those in other industrialized countries, places a severely limiting constraint on any plans for educational improvement.

Comparing Educational Effort

This paper compares education spending in 16 industrialized countries: most of western Europe, Canada, Japan and the U.S.[8] Our data source is the United Nations Educational, Scientific and Cultural Organization (UNESCO)[9], virtually the only commonly accepted source for such comparisons and the same source used by Administration officials. U.S. 1985 expenditure data come from the *Digest of Education Statistics*[10] (see Appendix A for details).

International Comparisons: Education Share of National Income

We will begin our study by comparing education expenditures expressed as a percentage of national income (Gross Domestic Product). This is a common method used for international comparisons which allows us to avoid the distortions caused by fluctuating exchange rates. Also, education expenditures expressed as a percentage of national income provide a measure of the national effort which each country directs toward education.

Table 1 shows education expenditures as a percentage of national income for 16 countries in 1985, the last year for which such data are available (tables appear beginning on page 11). A first but, as we will show later, misleading glance shows that U.S. spending on all levels of schooling, including pre-school, primary, secondary and higher education, in 1985 amounted to 6.8 percent of national income. This places the U.S. in a three-way tie for second place with one of the highest expenditure levels among the 16 countries studied. By this measure it appears that only Sweden spends a larger share of national income on education than does the U.S., and Canada and the Netherlands spend equivalent amounts. This figure showing the U.S. to spend a relatively large percentage of national income on education is the basis for the claims made by the President and others that the U.S. spends "lavishly" on education and that we spend more than most other countries.

This comparatively high expenditure on education is due, in large part, to the substantial sums the U.S. spends on *higher* education. A relatively larger number of U.S. students are enrolled in post-secondary

education than in most other countries. In 1985, 5.1 percent of the entire U.S. population was enrolled in some form of higher education, a figure two to three times larger than the percentage enrollments of any other country, except Canada (see Table 2). Larger enrollments, in what is also a more expensive form of education, raise U.S. total education expenditures above levels in many other countries.

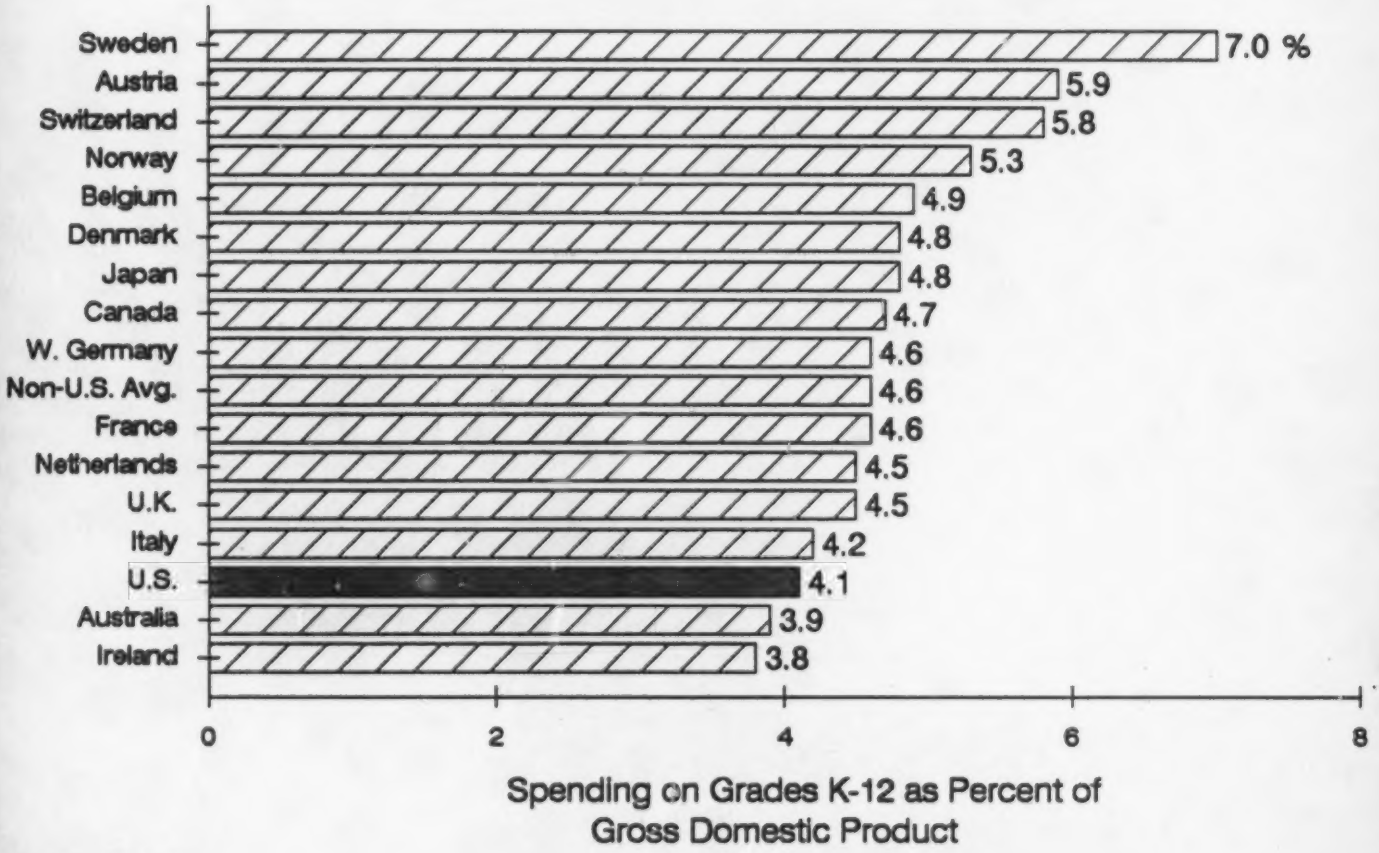
But the current crisis of American schools is not in higher education; it is in the primary and secondary school systems. A comparison of funding for *all* levels of education combined thus obscures the main focus of concern about American education. If spending on K-12 only is compared, as shown in column 2 of Table 1, in 1985 the U.S. tied for twelfth place, spending *less* than 11 of the other countries. Only three of the countries studied spent less than the U.S. on primary and secondary education.[11]

But this picture of relative spending is still incomplete. Calculations of funding adequacy must also be related to the size of the school age population in each country. Among the countries studied, the U.S. enrolls a relatively large percentage of the population in pre-primary, primary and secondary school (see Table 2). For example, over 19 percent of the U.S. population is enrolled in K-12, but less than 15 percent of the West German population and only 14 percent of the population in Switzerland. In Table 1, column 3, the K-12 expenditure figures of column 2 are adjusted to take into account the relative size of each country's K-12 enrollment (see Appendix A for methodology). By this more accurate calculation, among the 16 countries studied, *the U.S. spends less on pre-primary, primary and secondary education than all but two other countries.* Only Australia and Ireland spend less than the U.S. for the critically important grades K-12 (see Figure 1).

We can also compare U.S. education spending as a share of national income with the *average* share of the other 15 countries as shown in the bottom row of Table 1. The U.S. spent 4.1 percent of its national income on K-12 education in 1985, while the average abroad was 4.6 percent. If the U.S. were to have reached this average in 1985, we would have needed to raise spending for pre-primary, primary, and secondary school by over 12 percent, or by $20.6 billion annually. In 1988 dollars, the equivalent sum is $23.5 billion.

All the international comparisons made thus far still give an incomplete picture of comparative education spending. Large U.S., Japanese and German trade imbalances skew the data and make the U.S. education expenditure appear larger than is actually the case. A more accurate picture of education spending, taking into account trade imbalances, would lower U.S. spending and raise Japanese and German spending beyond the levels shown in Table 1. Further details and data appear in Appendix B.

Figure 1
Comparison of Country Education Expenditures, 1985



Source: Table 1.

Operating and Capital Expenditures

The rankings described above are derived from comparisons of education spending which include both operating expenses and capital expenditures. In order to judge whether the low U.S. rankings might be a result of some unique allocation of spending between capital and operating accounts, Table 3 ranks the 16 nations according to operating expenditures only. The comparison shows the U.S. position, relative to the other countries, to be nearly unchanged.

Public Spending on Education Compared

We have seen that the U.S. spends a smaller share of its national resources on K-12 than do most other industrialized countries. But there is another dimension in which the characterization of the U.S. as a big spender on education is wrong -- *public expenditures.*

For most of the 16 countries studied, UNESCO assembles data on *public* expenditures for education because public revenues provide virtually all of the money spent on education. Even in countries where a sizable segment of the school population is enrolled in private school, most private schools' expenses are paid with public money. Thus, public expenditures approximate total education spending. The two exceptions are Japan and the U.S. where 20-25 percent of all education funding comes from private sources. For these two countries, UNESCO provides data on public *and* private education expenditures.

Education policy is primarily, although not exclusively, concerned with public schools. Moreover, public education spending reflects the conscious national commitment to educating the next generation. It is therefore useful to compare levels of public spending in the U.S. and Japan, with public spending in the other 14 countries.

As Table 4 shows, when public spending abroad for all levels of education is compared with public spending in the U.S., the U.S. no longer ties for second place, but falls to fourteenth. Japanese public spending on all levels of education was 5.1 percent of national income, compared with 5.0 percent for the U.S. In a comparison of public funding for K-12 only, the U.S. falls from the already low ranking of 12 (when both public and private money is included), to number 14. If we educated public and private K-12 students at the actual per pupil expenditure rate found in public schools, this would increase spending and raise the U.S. ranking from 14 to 13.[12]

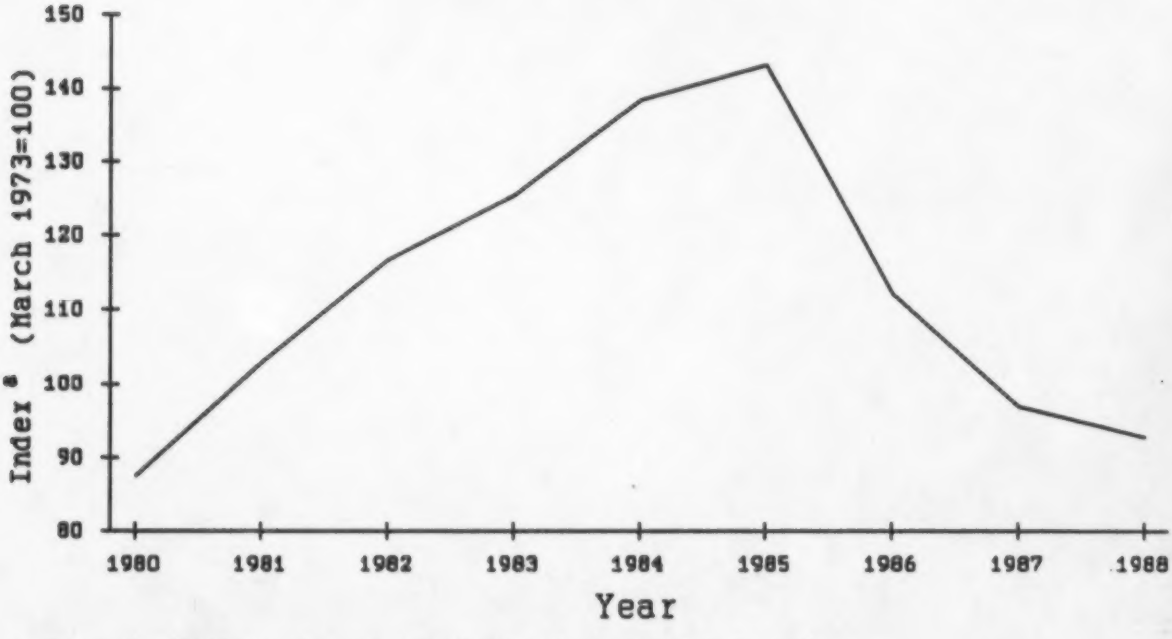
International Comparisons: Expenditures per Pupil

Thus far we have focused on education's share of national income in different countries. Education investment can also be analyzed by comparing expenditures per pupil. As we have seen, this is the measure Messrs. Cavazos, Boskin, and Finn have sometimes used to claim that the U.S. spends more on education than its economic competitors.

However, there are two potential sources of error in the use of per pupil expenditures to compare nations' spending on education. The first is the instability of exchange rates. Before cross-national comparisons can be made, expenditures measured in each country's national currency must be expressed in some common unit of measurement, e.g. dollars, yen, marks, etc. But whatever measure one chooses, it requires converting data collected in all other currencies to one currency.[13] However, exchange rates fluctuate, sometimes markedly, and this has been particularly true in the 1980s. For instance, in 1985, if $100,000 would have purchased a German school bus, by 1988, due to a decline in the value of the dollar, the same bus would have cost $166,000. If exchange rates were used to convert German expenditures into dollars, the purchase of the bus by a German school district in 1985 would have been shown as an expenditure of

$100,000, while the same purchase in 1988 would appear as an expenditure of $166,000. The size of the German expenditure measured in German marks would be unchanged, but fluctuations in the exchange rate used to convert marks to dollars would markedly change the dollar value of the expenditure. In 1985, the year which we have been examining, the dollar was particularly overvalued (see Figure 2). The effect is to make the U.S. expenditures on education appear relatively greater than those in other countries.

Figure 2
Value of the Dollar, 1980-88



a. Nominal multilateral trade-weighted value of the U.S. dollar.

Source: Federal Reserve Board.

The problem of using exchange rates to make spending comparisons is illustrated in Table 5. Using 1985 exchange rates, as shown in column 1, the U.S. ranked fourth among the 16 countries studied. But if some other value of the dollar is used to make the conversion, e.g., the 1988 exchange rate, then the U.S. ranking changes to ninth (column 2).

The second problem in using per pupil expenditures is that they do not necessarily reflect the national effort devoted to education. The real issue underlying cross-national comparisons is not the numbers of dollars or pounds which each country spends, but the relative national effort

devoted to education. For example, a poorer country could spend a relatively large share of national income on education, i.e., could make a large national effort to educate its youth, but have a much lower spending per pupil than a richer country devoting a smaller share of its income to education. Before meaningful international comparisons can be made, education expenditure levels must be related to some measure of total national income.

Moreover, countries with high per capita incomes will also have higher wages reflecting a higher standard of living. For example, high living standards in the U.S. mean that, in general, workers are better paid than in other countries. Therefore, we would expect education expenditures per pupil to be higher in the U.S. than in other countries.

Per pupil expenditures can be used to make international comparisons if two conditions are met: exchange rates are avoided, and if some measure of national income is included in the calculation. Such a measure is shown in Table 6. Expenditures per student are expressed as a percentage of per capita income measured in each nation's *own* currency. We find that of the 16 countries studied, U.S. spending on pre-primary, primary, and secondary education is lower than in all but two other countries.[14]

The Historical Record

The study thus far has examined expenditures at a single point in time, 1985, and has found that the U.S. spent relatively little on pre-primary, primary, and secondary education compared with other industrialized countries. Another important issue is how U.S. funding for education has changed over time and how U.S. spending has changed relative to that of other countries. Tables 7 and 8 show U.S. funding of K-12 education in the postwar period. Expenditures are expressed as a percentage of national income.

As shown in Table 7, expenditures for pre-primary, primary and secondary education peaked in 1974, and have fallen steadily since (see column 1). Thus, spending for education has not kept pace with overall economic growth. Over this same period, however, enrollments also have fallen (see column 3). Primary and secondary school enrollment, as a percentage of the total population, was at its highest level in 1969, and has been gradually falling since that time. Adjusting expenditure figures for the changing enrollments, using the same method as in the international comparisons, shows that the decline in spending for education has been more than offset by shrinking enrollments (see Table 7, column 2). In the 1980s, the declining fraction of the population enrolled in school has meant adjusted expenditures have risen, despite the slowdown in actual funding for education.

Table 8 shows how the funding sources for public education have changed over time. Adjusted federal revenues, after rising until 1980, by 1985 had fallen by .08 percent of national income. In the same five year period, state and local revenues rose by .14 percent and .08 percent, respectively. (Since these are percentages of our two to three billion dollar national income, these small changes of less than one percent actually indicate billion dollar variations in education expenditures. In 1988, 0.1 percent of national income equaled $4.46 billion.) Thus, the federal government's education funding responsibilities were shifted onto states and localities. The observed rise in adjusted total revenue is solely due to increased funding by states and localities. Among other consequences, this has increased the potential for greater disparities in funding between school districts across the nation.

Despite the increase in overall U.S. education funding of K-12 between 1980 and 1985, our position relative to other countries declined. Table 9 shows K-12 expenditures in 1980 and 1985 for the 16 countries we have been comparing, with both years' expenditures adjusted for the 1985 U.S. enrollment rate. In 1980 the U.S. ranked twelfth in adjusted spending on K-12, spending less than eleven other countries. But by 1985, the U.S. had fallen in rank to number fourteen.

U.S. education expenditures since 1985 are shown in Table 10.[15] Spending for pre-primary, primary, and secondary education, expressed as a percentage of national income and adjusted for 1985 enrollments, rose from 3.88 percent in 1980, to 4.08 percent in 1985, reached 4.21 percent in 1987, and has been relatively constant between 1987 and 1989. Because comparable international data are not available, we cannot determine how this post-1985 U.S. trend affects its relative ranking with the other countries.

Conclusion

We have seen that when public plus private spending on all levels of education is compared with spending in other industrialized countries, the U.S. is in a three-way tie for second place among the countries studied. However, when spending for primary and secondary education alone is compared with expenditures abroad, the U.S. ranking falls to a tie for twelfth place. And when adjustments are made for enrollment size, the U.S. falls further to fourteenth place, spending less than all the other countries except two.

When levels of public spending on education only are compared, showing the social commitment to public education, again the U.S. compares unfavorably with the other countries. Comparisons of public spending for all levels of education, and for K-12 alone, both place the U.S. in fourteenth place. In enrollment adjusted K-12 public expenditures, the U.S. does slightly better, ranking number thirteenth. But by all

comparisons, the U.S. devotes fewer resources to primary and secondary education than do most industrialized nations.

The claim that the U.S. spends more than other nations on education is misleading. By all comparisons, the U.S. devotes a smaller share of its resources to pre-primary, primary and secondary education than do most industrialized countries.

The comparatively weak U.S. investment in K-12 is not a result of a more efficient administrative structure or favorable demographics. In fact, the U.S. might be expected to spend proportionally *more* than other countries because of the particular characteristics of the U.S. school system and American society. Our decentralized school system gives more local autonomy and local choice, but is also more expensive than a single, centrally administered system. Our population is more heterogeneous than in most other countries. Some immigrants do not speak English. Students come from a variety of cultural backgrounds. The very high number of children living in poverty makes additional demands on the school system.

Available data do not permit cross-country comparisons to be made in much more detail, but other evidence suggests that the spending gap is particularly wide between the youngest American and foreign children. For example, it is generally accepted that the U.S. Head Start Program of early childhood education for disadvantaged children age three to five is valuable and cost effective, yet limited federal funding permits only 20 percent of eligible children to take part. Many of our competitors seem to have a stronger commitment to early childhood education, and some of them have nearly universal pre-kindergarten enrollments. In France, 100 percent of four- and five-year-olds attend school/educational day care, 90 percent of three-year-olds attend, and 36 percent of two-year-olds. In Belgium, 96 percent of three- to six-year-olds are in school, and in the Netherlands, 98 percent of four- and five-year-olds.[16]

Spending more money is not, of course, the only answer to the difficult problem of revitalizing primary and secondary education in the U.S. But the data presented here indicate that in education, as in every other service, we may "get what we pay for." Given the level of investment in our pre-primary, primary, and secondary schools, it is not surprising that we are slipping behind in comparative measures of performance as well.

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TABLE 1: COMPARISON OF INDUSTRIALIZED COUNTRY EXPENDITURES FOR EDUCATION, 1985

	EXPENDITURES /GDP		RANK			
	(1) K-12 and Higher Education		(2) K-12 Only		(3) Adjusted[a] K-12	
Country						
United States	6.8%	2	4.1%	12	4.1%	14
Australia	5.5	12	3.7	15	3.9	15
Austria	5.8	11	4.7	7	5.9	2
Belgium	6.1	7	4.9	5	4.9	5
Canada	6.8	2	4.7	7	4.7	8
Denmark	6.0	8	4.5	10	4.8	6
France[b]	5.9	10	5.1	3	4.6	9
Germany, West	4.6	16	3.5	16	4.6	9
Ireland[b]	6.0	8	5.0	4	3.8	16
Italy[c]	4.8	15	4.1	12	4.2	13
Japan	6.5	5	4.8	6	4.8	6
Netherlands[b]	6.8	2	4.7	7	4.5	11
Norway	6.3	6	5.4	2	5.3	4
Sweden	7.6	1	6.3	1	7.0	1
Switzerland	5.1	14	4.2	11	5.8	3
United Kingdom[b]	5.2	13	3.9	14	4.5	11
Non-U.S. Average	5.8		4.5		4.6	

[a] Adjusted for the 1985 U.S. K-12 enrollment rate
[b] 1984 data
[c] 1983 data

Sources: UNESCO; Statistical Yearbook, 1988.
National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 2: COMPARISONS OF PERCENTAGE ENROLLMENTS, 1985

Country	ENROLLMENT/TOTAL POPULATION	
	Higher Education	K-12
United States	5.1%	19.7%
Australia	2.3	18.8
Austria	2.4	15.8
Belgium	2.6	19.8
Canada	4.9	19.6
Denmark	2.3	18.5
France[a]	2.3	21.8
Germany, West	2.5	14.9
Ireland[a]	1.9	25.6
Italy[b]	2.0	19.5
Japan	1.9	20.1
Netherlands[a]	2.7	20.4
Norway	2.1	19.8
Sweden	2.6	18.0
Switzerland	1.7	14.0
United Kingdom[a]	1.8	17.1

[a] 1984 data
[b] 1983 data

Sources: UNESCO; Statistical Yearbook, 1988.
National Center for Educations Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 3: COMPARISON OF INDUSTRIALIZED COUNTRY OPERATING EXPENDITURES FOR EDUCATION, 1985

	EXPENDITURES /GDP		RANK			
	(1)		(2)		(3)	
Country	K-12 and Higher Education		K-12 Only		Adjusted[a] K-12	
United States	6.2%	3	3.8%	10	3.8%	13
Australia	5.0	11	3.4	15	3.5	15
Austria	5.3	10	4.2	8	5.3	2
Belgium	5.8	5	4.7	3	4.7	4
Canada	6.4	2	4.4	6	4.4	7
Denmark	5.8	5	4.3	7	4.6	6
France[b]	5.6	7	4.8	2	4.3	8
Germany, West	4.1	16	3.2	16	4.2	10
Ireland[b]	5.5	9	4.5	5	3.5	15
Italy[c]	4.4	15	3.8	10	3.9	12
Japan	4.8	13	3.6	14	3.6	14
Netherlands[b]	6.0	4	4.1	9	4.0	11
Norway	5.6	7	4.7	3	4.7	4
Sweden	6.7	1	5.6	1	6.2	1
Switzerland	4.7	14	3.8	10	5.3	2
United Kingdom[b]	5.0	11	3.7	13	4.3	8
Non-US Average	5.1		3.9		4.1	

[a] Adjusted for the 1985 U.S. K-12 enrollment rate
[b] 1984 data
[c] 1983 data

Sources: UNESCO; Statistical Yearbook, 1988.
National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 4: JAPAN AND THE UNITED STATES: PUBLIC AND PRIVATE EDUCATION EXPENDITURES, 1985

	EXPENDITURES/GDP (rank)		
	K-12 and Higher Education	K-12 Only	Adjusted[a] K-12
United States			
Public and Private	6.8% (2)	4.1% (12)	4.1% (14)
Public only	5.0 (14)	3.8 (14)	4.3[b] (13)
Japan			
Public and Private	6.5% (5)	4.8% (6)	4.8% (6)
Public only	5.1 (13)	NA.	NA.

[a] Adjusted for the 1985 U.S. K-12 enrollment rate (public plus private)
[b] The 1985 U.S. K-12 public enrollment rate is adjusted for the 1985 U.S. K-12 public plus private enrollment rate
NA = not available

Source: UNESCO; Statistical Yearbook, 1988.
National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 5: COMPARISON OF K-12 1985 EXPENDITURES PER PUPIL IN INDUSTRIALIZED COUNTRIES

	Converted to Dollars Using:			
	1985 EXCHANGE RATES		1988 EXCHANGE RATES	
Country	Expenditures Per Pupil	Rank	Expenditures Per Pupil	Rank
United States	$3,456	4	$3,456	9
Australia	2,040	11	2,291	14
Austria	2,564	8	4,297	6
Belgium	2,015	12	3,254	10
Canada	3,322	5	3,683	8
Denmark	2,802	6	4,410	5
France[a]	2,051	10	3,094	12
Germany, West	2,395	9	4,016	7
Ireland[a]	956	16	1,380	16
Italy[b]	1,233	15	1,809	15
Japan	2,647	7	4,927	4
Netherlands[a]	1,919	13	3,224	11
Norway	3,792	3	5,002	3
Sweden	4,224	1	5,932	2
Switzerland	4,205	2	7,061	1
United Kingdom[a]	1,668	14	2,314	13

[a] 1984 data
[b] 1983 data

Sources: UNESCO; Statistical Yearbook, 1988.
National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 6: COMPARISON OF INDUSTRIALIZED COUNTRY K-12 EXPENDITURES PER PUPIL AS A PERCENT OF PER CAPITA INCOME, 1985

Country	Percent	Rank
United States	20.8%	14
Australia	19.5	15
Austria	29.7	2
Belgium	25.0	5
Canada	24.0	8
Denmark	24.5	6
France[a]	23.2	10
Germany, West	23.5	9
Ireland[a]	19.4	16
Italy[b]	21.1	13
Japan	24.1	7
Netherlands[a]	23.0	11
Norway	27.1	4
Sweden	35.3	1
Switzerland	29.6	3
United Kingdom[a]	22.8	12
Non-U.S. Average	23.5	

[a] 1984 data
[b] 1983 data

Sources: UNESCO; Statistical Yearbook, 1988.
National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 7: UNITED STATES K-12 EXPENDITURES, 1949-1985

	EXPENDITURES/GDP		
	(1)	(2)	(3)
Year	Total	Adjusted[a] Total	Enrollment as % of Population
1949	2.41%	2.38%	19.08%
1959	3.39	2.78	22.98
1965	4.01	3.03	24.95
1969	4.51	3.37	25.22
1972	4.57	3.56	24.18
1974	4.74	3.81	23.41
1976	4.50	3.73	22.70
1978	4.19	3.69	21.40
1980	4.18	3.88	20.34
1982	4.13	4.00	19.46
1984	4.01	3.98	18.98
1985	4.08	4.08	18.83

[a] Adjusted to the 1985 K-12 enrollment rate.

Note: These 1980 and 1985 adjusted expenditures differ from those shown in Tables 1 and 9. See endnote 15 for an explanation.

Source: National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 8: SOURCE OF PUBLIC REVENUES FOR UNITED STATES PUBLIC K-12, 1949-1985

	ADJUSTED[a] REVENUES/GDP		
Year	(1) Federal	(2) State	(3) Local
1949	.06%	.82%	1.18%
1959	.11	.98	1.41
1965	.22	1.08	1.46
1969	.25	1.23	1.61
1972	.29	1.31	1.69
1974	.31	1.47	1.69
1976	.31	1.51	1.66
1978	.33	1.56	1.53
1980	.33	1.72	1.57
1982	.26	1.75	1.64
1984	.24	1.80	1.63
1985	.25	1.86	1.65
Change 1980-1985	-.08	+.14	+.08

[a] Adjusted to the 1985 K-12 enrollment rate.

Source: National Center for Education Statistics, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 9: COMPARISON OF INDUSTRIALIZED COUNTRY 1980 AND 1985 EXPENDITURES FOR EDUCATION

Country	Total K-12 Expenditures/GDP 1980[a]	Rank 1980[a]	Total K-12 Expenditures/GDP 1985[a]	Rank 1985[a]
United States	4.1%	12	4.1%	14
Australia	4.0	13	3.9	15
Austria	5.3	4	5.9	2
Belgium	4.6	9	4.9	5
Canada	4.9	7	4.7	8
Denmark	5.5	3	4.8	6
France[b]	3.8	15	4.6	9
Germany, West	4.4	10	4.6	9
Ireland[b]	4.0	14	3.8	16
Italy[c]	3.8	16	4.2	13
Japan	5.3	4	4.8	6
Netherlands[b]	4.8	8	4.5	11
Norway	5.7	2	5.3	4
Sweden	8.5	1	7.0	1
Switzerland	5.1	6	5.8	3
United Kingdom[b]	4.4	10	4.5	11
Non-U.S. Average	4.6		4.6	

[a] Adjusted for 1985 U.S. K-12 enrollment
[b] Data listed for 1985 is actually 1984
[c] Data listed for 1985 is actually 1983; data listed for 1980 is actually 1979.

Sources: UNESCO; Statistical Yearbook, 1988.
NCES, U.S. Department of Education; Digest of Education Statistics, 1988.

TABLE 10: UNITED STATES K-12 EXPENDITURES, 1980-1989

Year	Expenditures/GDP[b]
1980	3.88%
1982	4.00
1985	4.08
1986	4.19
1987[a]	4.21
1988[a]	4.20
1989[a]	4.22

[a] Estimate
[b] Adjusted for the 1985 K-12 enrollment rate

Source: National Center for Education Statistics, U.S. Department of Education; Digest of Educational Statistics, 1988, and 1989 (forthcoming).

APPENDIX A: METHODOLOGY FOR COMPARING EXPENDITURES

The purpose of this paper is to compare education expenditures, in particular for pre-primary, primary and secondary education, among industrialized countries. The only source of education expenditure data for multiple countries is the UNESCO *Statistical Yearbook*. Data from 1985 and 1980 were examined. 1985 is the most recent year for which data are available for most countries, and 1980 was chosen arbitrarily as a starting point from which to estimate trends.

The 1988 *Yearbook* provides the enrollment and expenditure data for all countries in this report, with the exception of the U.S. 1985 expenditure. Since UNESCO lists no U.S. education expenditure figures for years since 1983, these figures were obtained from the U.S. Department of Education's 1988 *Digest of Education Statistics*. A question immediately arises concerning the comparability of the U.S. and UNESCO data. Examination of total education expenditure figures for 1982 and 1983, the most recent years for which both UNESCO and *Digest* data are available, shows that the numbers correspond quite closely. In 1982, UNESCO's figure was 1.5 percent greater than the *Digest*'s, and in 1983, the *Digest*'s was .93 percent larger than UNESCO's.

Public and Private Expenditures

For all countries except the U.S. and Japan, UNESCO provides data on *public* spending for education which includes nearly all education expenditures. In the U.S., about 25 percent of all education spending is private money which is spent primarily for higher education. The UNESCO figures given for the U.S. are for combined public and private spending. In Japan, approximately 20 percent of all education spending is private and it is also biased toward higher education. Since 1984, the UNESCO figures for Japan include both public and private expenditures. Our calculation of 1980 public *and* private Japanese education spending is explained below.

Spending for Pre-Primary, Primary, and Secondary Education

Our primary goal is to compare K-12 spending among industrialized countries. Unfortunately, UNESCO does not disaggregate total expenditures into spending for K-12 and higher education, but this information can be calculated from the data given. (In this paper, when the expression K-12 is used, "K" represents all the pre-primary years.) UNESCO divides total education spending into current (operating expenses) and capital expenditures and provides the distribution of *current* expenditures between K-12 and higher education. However, data on capital expenditures are not available by level of schooling. It is therefore necessary to estimate total spending on K-12 by making assumptions about the distribution of capital spending between K-12 and higher

education. (For most countries, capital spending is less than ten percent of total spending.)

First, the ratio of current spending on K-12 to current spending on both K-12 and higher education is determined. This ratio is then applied to total capital expenditures to estimate capital spending for K-12. The estimated K-12 capital spending is added to K-12 current spending to give a preliminary figure for K-12 expenditures. (Other additions to this amount are described below.) This method assumes that capital spending is apportioned between K-12 and higher education exactly as is current spending. Although this assumption is probably not strictly accurate (see below), it affects the calculation of every country's expenditures (by a very small amount), and so will not bias our results toward any particular country. The comparison of K-12 operating expenses (current expenditures) shown in Table 4 yields essentially the same rankings as our comparison of total K-12 spending.

As mentioned above, current expenditures are disaggregated into spending for K-12 and higher education, but also into two additional categories: "other" and "not distributed." The latter two categories, as defined by UNESCO, include, respectively, spending on "special, adult, and other types of education which cannot be classified by level" and "administration for which there is no breakdown by level of education." The U.S. assigns no expenditures to these two categories while in other countries these two items account for up to 25 percent of all current expenditures. Ignoring these two categories would have seriously biased our results. To compare K-12 expenditures among countries, all education spending, including the sizable expenditures listed in the "other" and "not distributed" categories, must be assigned to either K-12 or higher education.

The exact distribution of these expenditures by level of education is not available. Therefore, we estimate their contribution to total K-12 spending by assuming that spending in these two categories is distributed between K-12 and higher education in the same proportion as is the rest of current spending. Adding these amounts to the preliminary K-12 total described above gives total K-12 spending.

1985 U.S. education expenditures are obtained from the *Digest of Education Statistics*. We want to estimate 1985 U.S. spending on K-12 by the same method that is used for the other countries, i.e., by assuming that the percentage of total capital spending which goes to K-12 is the same as the percentage of current spending for K-12. Therefore, we need to know the percentage of current spending for K-12, as well as total current and capital spending for all levels of education. The *Digest* supplies most of these data, except the distribution of private K-12 spending between current and capital expenses. So one additional assumption is necessary to calculate total U.S. K-12 spending. We assume that the ratio of current to capital K-12 spending is the same for private

expenditures as for public. We can then determine total K-12 spending for the U.S.

More detailed data show that current and capital spending in the U.S. are not distributed between K-12 and higher education in the same proportions. K-12 usually accounts for a larger share of current spending than of capital spending. Put another way, capital spending is skewed toward higher education. In our treatment of capital expenditures, some fraction of capital spending for higher education is attributed to K-12. Our method tends to over-estimate K-12 spending, especially for the U.S. where expenditures on higher education are so large. This upward bias in our estimate of K-12 spending, particularly for the U.S., is a bias against our conclusion that the U.S. is a low spender on pre-primary, primary, and secondary education.

Japan presents other difficulties. As noted above, 20 percent of all education spending in Japan is private money. Therefore we need to include both public and private expenditures in our calculations of K-12 spending. Beginning in 1984, UNESCO lists both total (public plus private) education spending and public spending for Japan. Prior to 1984, only public expenditures are provided. In Table 9, 1980 combined public and private education expenditures are estimated by increasing the 1980 public spending figure by the percentage of 1985 private to public spending. This assumes that private expenditure as a percentage of total spending was equal in 1980 and 1985. Another piece of information is also lacking. To calculate public plus private K-12 spending in 1980, the distribution of private as well as public spending by level of education is needed. But this information is provided for public spending only. Since private expenditures are skewed toward higher education, we would be wrong to assume equivalent distributions between K-12 and higher education for both public and private expenditures. Therefore, we use the 1985 distribution figure for public plus private spending, applied to the 1980 combined expenditures, to estimate total 1980 K-12 spending in Japan.

Enrollments and Enrollment Adjusted Expenditures

UNESCO data on enrollments are used to make all the international comparisons. The enrollment figures include students in both private and public schools since the expenditures cover both private and public schools.

Because different countries have different proportions of school-age children in their populations, some adjustment must be made for differing enrollment rates among countries. For example, when expenditures are expressed as a percentage of national income, a country with 20 percent of its population enrolled in school would be expected to spend more on education than a country with an enrollment rate of only 15 percent. To

permit meaningful comparisons, expenditures must be adjusted to a common enrollment rate, where the enrollment rate is calculated as the percentage of the population actually enrolled in school.

Any enrollment rate could have been chosen as the standard to which all countries' expenditures are adjusted. We chose the 1985 U.S. rate. To adjust other countries' expenditures to the U.S. enrollment rate, foreign expenditures as a percentage of GDP are multiplied by the ratio of the U.S. enrollment rate to the foreign enrollment rate. This raises (lowers) expenditures for countries with enrollment rates below (above) those of the U.S. The adjusted expenditure figure shows the level of spending which would occur if each country enrolled the same percentage of the population as did the U.S., while its rate of spending remained unchanged. This adjustment assumes constant returns to scale in education.

Non-U.S. Averages

A non-U.S. average is the weighted average of all countries' (except the U.S.) expenditures expressed as a percentage of GDP. The weights are the ratio of the number of each country's students over the total number of students in all (except the U.S.) countries.

APPENDIX B: EDUCATION SHARE OF NATIONAL SPENDING

To indicate the national effort expended on education by each country, the education spending data in Table 1 is expressed as a portion of total national *income*, i.e., Gross Domestic Product. Usually national spending equals national income. However, when a country has a trade deficit (or surplus), national income and national spending diverge by the amount of the deficit (or surplus). This has the effect of making the education effort appear relatively greater in a deficit nation and relatively smaller in a surplus country. In effect, using national income as the denominator does not take into account the fact that the total national spending in a trade deficit country has been swollen by borrowing from abroad. In a trade deficit country, national spending is greater than national income, and education expenditures are a smaller share of national spending than of national income. Thus, a more accurate picture might be obtained by comparing the fraction of each country's total national *spending* which is devoted to education.

Table B1 shows education expenditures as a percentage of national spending for the U.S., which has a large trade deficit, and the two major trade surplus countries -- West Germany and Japan. In 1985, U.S. spending on pre-primary, primary and secondary education was only 3.99 percent of total national spending, while Germany spent 4.81 percent and Japan 4.92 percent. In either case, whether education expenditures are calculated as a share of national income or national spending, the U.S. spends less than all but two of the 16 countries studied.

TABLE B1: TRADE ADJUSTED EDUCATION EXPENDITURES, 1985
(in millions)

	Germany (DM)	Japan (¥)	United States ($)
1. GDP	1,830,490	316,303,000	3,967,472
2. Trade Surplus	66,390	10,775,000	-118,652
3. Total Spending (1-2)	1,764,100	305,528,000	4,086,124
4. Adjusted K-12 Spending	84,806	15,022,619	162,960
-As Share of GDP	4.6%	4.8%	4.1%
-As Share of Total Spending	4.8%	4.9%	4.0%

Sources: National Center for Education Statistics, U.S. Department of Education; Digest of Educational Statistics, 1988.
UNESCO; Statistical Yearbook, 1988.
OECD, National Accounts, Vol. 1, 1989.

Endnotes

1. Speech at Education Summit, University of Virginia, September, 28, 1989. (White House transcript).

2. Press Briefing, Charlottesville, Virginia; September 27, 1989. (White House transcript).

3. Press Conference, May 3, 1989. (U.S. Department of Education transcript).

4. Speech at an American Council for Capital Formation conference, Washington, D.C., October 12, 1989. (ACCF transcript).

5. "Bargain Remedies for our Educators," *New York Times*, June 22, 1989.

6. NBC "Today Show," September 27, 1989.

7. Speech at an American Council for Capital Formation conference, Washington, D.C., October 12, 1989. (ACCF transcript).

8. Included in the study are Canada, Japan, Australia, and all of western Europe, except for the three least wealthy countries: Turkey, Greece and Portugal. Spain is omitted because the UNESCO data are insufficient, and Luxembourg because of its small size. Other analysts might prefer another grouping of countries. However, any selection of industrialized countries would show the U.S. to be a relatively low spender on education.

9. UNESCO. 1988. *Statistical Yearbook*. Paris: UNESCO. This is virtually the only source of data for making international comparisons of education spending. It was the data source for comparative studies of education spending done by the U.S. Department of Education and the Congressional Research Service. Some of the UNESCO data are reproduced in the annual *Statistical Abstract of the United States* by the U.S. Department of Commerce.

10. National Center for Education Statistics, U.S. Department of Education. 1988. *Digest of Education Statistics*. Washington, D.C.: Government Printing Office.

11. It might be argued that the U.S. "backloads" education system by putting more money into higher education. If so, comparing education spending at the K-12 level, as we do, biases any comparison against the U.S. system and the appropriate comparison is spending for all education levels (which shows the U.S. is a relatively high spender). This may or may not be so. However, if the U.S. system must be evaluated at the collegiate level then no cross-country comparisons of spending and student performance are

possible since student test scores are only available for fourteen year olds. As a result, there are no data to support the claim that we have high spending and low performance.

12. There are many factors which account for the lower expenditures of private schools. In 1985, 75 percent of private primary and secondary students were in grades K-8, and only 25 percent were in grades 9-12. Education in the lower grades is less expensive than education in higher grades. Many private schools offer fewer extracurricular activities and special classes than do public schools. Private schools also receive some public monies, although the U.S. Department of Education does not calculate the exact amounts. The sources of these funds include the Title I program for low income students, salaries for some special education teachers, sharing of textbooks and bus transportation, and others.

13. Purchasing power parity rates could be used for the conversions, but these also give misleading results. Expenditures must be related to some measure of national income.

14. This is not a second, independent confirmation of this ranking, but a different calculation using the same data as in Table 1.

15. The enrollment adjusted expenditure figures of Tables 7 and 10 differ from those in Tables 1 and 9. Since UNESCO does not provide any expenditure or enrollment information for years after 1986, all data, both expenditures and enrollments, in Tables 7 and 10 were obtained from the 1988 and 1989 (forthcoming) *Digest of Education Statistics*. The 1985 figure of 4.08 percent, calculated from the *Digest* data, is close to the value in Tables 1 and 9 of 4.1 percent. Differences stem from our use of a calculated capital expenditure figure which is greater than true spending, and from minor discrepancies between the U.S. and UNESCO data. The 1980 figure of 4.1 percent in Table 9 is 6 percent greater than the 3.88 percent shown in Tables 7 and 10. UNESCO lists 1980 K-12 expenditure as $116.0 billion which is very similar to the 1981 *Digest*'s figure of $116.3 billion. However, the 1988 *Digest* gives a revised 1980 K-12 expenditure of $112.3 billion, and this is the value used in Tables 7 and 10. Also, UNESCO enrollment figures tend to be larger than those reported by the U.S. These two factors account for the difference between the 1980 numbers.

16. Hough, J.R. 1984. "France" in *Educational Policy, an International Survey*, J.R.Hough, ed., New York: St Martin's Press.

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